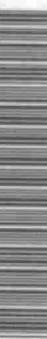


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THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

TOWN OF SMOOTH ROCK FALLS

DISTRICT OF COCHRANE

1966

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TOWN OF SMOOTH ROCK FALLS
1966
DISTRICT OF COCHRANE

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**TD
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1966**

Report on a water pollution
survey of the town of Smooth
Rock Falls, district of Cochrane.
80938

REPORT

on a

WATER POLLUTION SURVEY

of the

TOWN OF SMOOTH ROCK FALLS

District of Cochrane

June 1966

Division of Sanitary Engineering

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ONTARIO WATER RESOURCES COMMISSION

REPORT

INTRODUCTION

A water pollution survey was made of the Town of Smooth Rock Falls on September 17, 1965. The purpose of this survey was to locate and record all significant sources of water pollution within the town. Such surveys are performed routinely, and upon request, by the Ontario Water Resources Commission as a basis for evaluating all existing and potential sources of pollution. When sources of pollution are found, corrective action is requested by the Commission.

The information received from the town officials and personnel of the Abitibi Power and Paper Company Limited is gratefully acknowledged.

I GENERAL INFORMATION

The Town of Smooth Rock Falls is located in the Township of Kendry in the District of Cochrane. The town had a 1964 assessed population of 1,177 (1965 Municipal Directory), and is situated on the east shore of the Mattagami River.

The Abitibi Power and Paper Company Limited is the only predominant industry in Smooth Rock Falls.

II WATER USES

1. Municipal Water System

Water for the Town of Smooth Rock Falls is supplied by the Abitibi Power and Paper Company Limited water works.

Water is obtained from the Mattagami River and passed through coarse screens, chlorinated, and pumped directly to the distribution system. No storage is provided. The average daily water pumpage is approximately 490,000 gallons. One of the two pumps, servicing the system, operates continuously to maintain a positive pressure on the system.

The bacteriological quality of the water was satisfactory at the time of the last OWRC inspection.

2. Industrial Water Supply

Abitibi Power and Paper Company Limited

Water for operations at this industry is supplied by the company-owned water works. The domestic and drinking water supply for the mill is filtered and chlorinated.

Water for industrial purposes is pumped from the Mattagami River. A portion of the water used is filtered while the remainder is untreated.

3. Recreational

The Mattagami River is principally used for fishing. Because of the logs floated on the river by the Abitibi Power and Paper Company Limited, there are no public beaches on the river within the vicinity of the Town of Smooth Rock Falls.

III WATER POLLUTION

1. Sanitary Waste Disposal

The Town of Smooth Rock Falls is serviced by a separate

sewer system. Domestic wastes are directed to the sanitary sewers. The wastes are collected into one sewer which outfalls to a tributary of the Mattagami River. No treatment is provided for the wastes. This tributary also receives domestic wastes from the Community of Mooreville located to the east of Smooth Rock Falls.

Storm water is directed to the Mattagami River and its tributaries via storm sewers and open ditches.

2. Refuse Disposal

The refuse disposal site is located in the northern portion of the town. It is a burn and cover type of dump. Due to its close proximity to the tributary of the Mattagami River, leachate from the dump may gain access to the watercourse. Consequently the municipality should consider relocating the refuse disposal site.

3. Industrial Waste Disposal

Abitibi Power and Paper Company Limited

The Smooth Rock Falls Division of Abitibi Power and Paper Company Limited is located on the east bank of the Mattagami River, just north of Highway No. 11. Approximately 376 people are employed at this mill.

Wood consumption is approximately 130,000 cords per year. About 22 million imperial gallons of water are used daily in the production of 225 tons of bleached sulphite pulp. Sanitary and industrial wastes are discharged without treatment to the Mattagami River. Bark deposits are visible in the river within the vicinity

of the mill.

A 1964 survey by the OWRC Division of Industrial Wastes revealed that the Smooth Rock Falls mill was discharging approximately 66 tons of biochemical oxygen demand, along with 73 tons of suspended solids daily, to the Mattagami River.

The mill is in the process of being converted from the acid sulphite to the Kraft process. Although the BOD of the discharge to the river will be less with this new process, the pollution of the Mattagami River will not be abated. Pollution of a more objectionable nature is likely to occur unless proper safeguards are taken.

4. Discussion of Sample Analyses

The laboratory results of the bacteriological examinations and the chemical analyses of samples collected from the watercourses and outfalls are included in Table I which is appended to this report. An outline of the OWRC objectives and descriptions of the tests are also appended.

A sample, collected from the Mattagami River downstream from the Abitibi dam site, revealed a total coliform count of 2,400,000 organisms per 100 c.c. This is in excess of the Commission's objective of not greater than 2,400 coliform organisms per 100 c.c.

Samples, taken from the four main sewers servicing the Abitibi mill, indicated that the 5-Day BOD and suspended solids concentration were in excess of the Commission's objectives of not greater than 15 ppm for both concentrations. The four main sewers

consist of the Caustic, Bleach plant, Blowpit, and Woodroom sewers. The sample, collected from the Woodroom sewer revealed a coliform population of 24,000,000 coliform organisms per 100 c.c. indicating fecal pollution.

A sample, collected from the storm sewer from Seventh Avenue, revealed a suspended solids content of 50 ppm exceeding the Commission objective of not greater than 15 ppm.

Effluent from the storm sewer at Fourth Avenue indicated an ABS of 0.1 ppm indicating the presence of domestic wastes.

The water sample, taken from the watercourse downstream from the town's sanitary sewer outfall, revealed a total coliform count of 11,000,000 coliform organisms per 100 c.c. This greatly exceeds the Commission objective of not greater than 2,400 coliform organisms per 100 c.c. Also, a 5-Day BOD concentration of 4.8 ppm was obtained, exceeding the Commission objective of not greater than 4.0 ppm.

The sample, collected upstream from the sanitary sewer outfall, showed that the 5-Day BOD and total coliform concentrations were within the Commission objectives.

This reveals that the deterioration of the water quality of this watercourse is caused by the discharging of raw domestic wastes to the watercourse.

IV SUMMARY AND CONCLUSIONS

A municipal water pollution survey was made of the Town of Smooth Rock Falls on September 17, 1965.

Water for the Town of Smooth Rock Falls is supplied by the Abitibi Power and Paper Company Limited water works.

The town is serviced by a separate sewer system. Domestic wastes are directed to a tributary of the Mattagami River. Treatment is not provided.

The municipal refuse disposal site is located within a short distance of the tributary and leachate from this dump could be a possible source of pollution.

Industrial wastes from the Abitibi Power and Paper Company Limited are discharged to the Mattagami River without treatment.

This survey reveals that improper sewage and industrial wastes disposal methods are being practised in the Town of Smooth Rock Falls resulting in the deterioration of water quality of the Mattagami River.

The discharge of polluting wastes to a watercourse is prohibited by the Ontario Water Resources Commission Act, and action should be taken to correct this undesirable situation.

V RECOMMENDATIONS

1. Action should be taken by the municipality to initiate a water pollution control project.

2. A new location for the refuse disposal site should be considered.

3. The Abitibi Power and Paper Company Limited should eliminate the discharge of polluting industrial wastes to the Mattagami River.

All of which is respectfully submitted,

District Engineer *G.H. Illsingham*
C.E. McIntyre, P.Eng.,

Approved by J.R. Barr, Director,
Div. of Sanitary Engineering.

/elb
Prepared by: G.K. Boretski,
Engineer's Assistant.

APPENDIX

THE SIGNIFICANCE OF LABORATORY RESULTS

The OWRC objectives for surface waters in Ontario are as follows:

5-Day BOD - not greater than 4 ppm
Total Coliform Organisms - not greater than 2,400 coliforms per 100 c.c.

Phenolic Equivalents:

Average - not greater than 2 ppb
Maximum - not greater than 5 ppb

pH - 6.7 to 8.5

Adequate protection for these waters, except in specific instances influenced by local conditions, should be provided if the following waste discharge concentrations are obtained:

| <u>ITEM</u> | <u>CONCENTRATIONS</u> |
|----------------------|-------------------------|
| 5-Day BOD | not greater than 15 ppm |
| Suspended solids | not greater than 15 ppm |
| Phenols | not greater than 20 ppb |
| pH | 5.5 to 10.6 |
| Iron | not greater than 17 ppm |
| Ether Solubles (Oil) | not greater than 15 ppm |

EXPLANATION OF LABORATORY RESULTS

Bacteriological Examinations

The Most Probable Number technique is used by the Ontario Department of Health to obtain an approximation of the actual number of coliform organisms present. These organisms are the normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in sewage and are, in

general, relatively few in number in other stream pollutants.

Biochemical Oxygen Demand (BOD)

The biochemical oxygen demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent, polluted waters, or industrial wastes, by aerobic biochemical action. The time and temperature used are five (5) days and 20°C, respectively.

Solids

The analyses for solids include tests for total, suspended, and dissolved solids. Total solids is a measure of the solids in solution and in suspension. Suspended solids indicate the measure of undissolved solids of organic or inorganic nature whereas the dissolved solids are a measure of those solids in solution.

ABS (Alkyl Benzene Sulfonate)

The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of illegal discharge of waste water to storm drains.

The popular use of synthetic detergents for general cleaning purposes has resulted in the incidence of residual ABS in streams. As an objective, the ABS concentration should not exceed 0.5 ppm in water used for domestic purposes.

TOWN OF SMOOTH ROCK FALLS

TABLE I

| SAMPLING POINT NO. | DESCRIPTION | DATE | 5-DAY BOD (PPM) | SOLIDS | | | ANIONIC DETERGENTS AS ABS | TOTAL MPN* | E. COLI PER 100 C.C. | EST. DWF |
|--------------------------|---|-------------|-----------------------|----------------|----------------|----------------|------------------------------------|------------|----------------------------|--|
| | | | | TOTAL (PPM) | SUSP. (PPM) | DISS. (PPM) | | | | |
| MTD-0.4 | CREEK DOWNSTREAM FROM SANITARY SEWER OUTFALLS. | SEPT. 17/65 | 4.8 | 340 | 173 | 167 | | 11,000,000 | 2,400,000 | |
| MTD-0.5 S-1 | 24-INCH DIAMETER CONCRETE SANITARY SEWER - SMOOTH ROCK FALLS. | SEPT. 17/65 | | | | | PARTIALLY SUBMERGED - NOT SAMPLED. | | | |
| MTD-0.5 S-2 | 10-INCH DIAMETER TILE SANITARY SEWER - MOOREVILLE. | SEPT. 17/65 | | | | | PARTIALLY SUBMERGED - NOT SAMPLED. | | | |
| MTD-0.8 | CREEK UPSTREAM FROM SANITARY SEWER OUTFALLS. | SEPT. 17/65 | 2.4 | 166 | 5 | 161 | | 430 | 23 | |
| MT-128.7 | MATTAGAMI RIVER DOWNSTREAM FROM ABITIBI. | SEPT. 17/65 | 2.1 | 110 | 10 | 100 | | 2,400,000 | 3.6 | |
| MT-128.7 I-1 | ABITIBI - 18-INCH DIAMETER FIBREGLASS SEWER. | SEPT. 17/65 | | | | | INSUFFICIENT FLOW. | | | |
| MT-128.7 I-2 | ABITIBI - 14-INCH DIAMETER IRON SEWER. | SEPT. 17/65 | 2.4 | 232 | 1 | 231 | | | | |
| MT-128.8 I-1 | ABITIBI - CAUSTIC SEWER. | SEPT. 17/65 | 67 | 686 | 43 | 643 | | 0 | | |
| MT-128.8 I-2 | ABITIBI - BLEACH PLANT SEWER. | SEPT. 17/65 | 90 | 1038 | 530 | 508 | | 0 | 0 | MT-128.8 I-1-2-3 COMBINED 16.8 MGD. |
| MT-128.8 I-3 | ABITIBI - BLOW PIT SEWER. | SEPT. 17/65 | 2600 | 8836 | 574 | 8262 | | 0 | 0 | |
| MT-128.8 IS | ABITIBI - WOODROOM SEWER. | SEPT. 17/65 | 380 | 766 | 508 | 258 | | 24,000,000 | 23 | 4.8 MGD. |
| MT-129.2 W | 12-INCH DIAMETER CONCRETE STORM SEWER. | SEPT. 17/65 | 1.2 | 506 | 9 | 497 | | 0 | 9.1 | 0.5 GPM. |

TABLE I (CONT'D)

| SAMPLING POINT NO. | DESCRIPTION | DATE | 5-DAY BOD (PPM) | SOLIDS | | | ANIONIC DETERGENTS AS ABS | TOTAL MPN* | | EST. DWF |
|--------------------------|--|-------------|-----------------------|----------------|----------------|----------------|---------------------------------|---------------------------------------|----------------------------|-------------|
| | | | | TOTAL (PPM) | SUSP. (PPM) | DISS. (PPM) | | COLIFORM ORGANISMS PER 100 C.C. | E. COLI PER 100 C.C. | |
| MT-129.6 W | 14-INCH DIAMETER TILE STORM SEWER. | SEPT. 17/65 | 0.3 | 570 | 5 | 565 | 0.1 | 1,500 | 23 | 3 GPM. |
| MT-129.6 | MATTAGAMI RIVER AT HIGHWAY No. 11. | SEPT. 17/65 | 0.6 | 106 | 3 | 103 | | 15,000 | 0 | |
| MT-129.8 W | 14-INCH DIAMETER CORRUGATED STORM SEWER. | SEPT. 17/65 | 1.7 | 514 | 50 | 464 | | 460 | 0 | 2 GPM. |

* BACTERIOLOGICAL EXAMINATION PERFORMED BY ONTARIO DEPARTMENT OF HEALTH REGIONAL LABORATORY TIMMINS, ONTARIO.

